

## OPTICAL NETWORK RESTORATION

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### ABSTRACT

10 A method for protecting the flows of traffic against, and for restoring them from, a failure in a multifunctional, hybrid broadband access-and-transport network system includes the provisioning of at least two Virtual Flows ("VFs") of traffic between each pair of ingress and egress ("I/E") nodes in the system. The at least two VFs are provisioned such that each takes a different physical path from the other. The VFs taking the same physical path are then respectively grouped into two "Path Protection Groups" ("PPGs"). Each of the PPGs has a dedicated  
15 "Management Control Flow" ("MCF") provisioned within it that is carried in the at least one VF contained therein. The detection of a fault in the traffic in an "active" PPG results in the generation of a protection switching signal ("PSS") being generated and sent by the nodes detecting the fault along the MCF of the affected PPG to the relevant "protection switching entities" ("PSEs"), *i.e.*, the affected I/E nodes,  
20 which responsively effect a protection switch of either the reception, or both the transmission and the reception, of the affected traffic from the affected "active" PPG to the associated "protect" PPG to thereby restore path and traffic continuity within the system. The method is independent of the transport layer and can thus be used to protect traffic in networks having transport systems other than SONET.